PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

Patent Office
Canberra

I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PS 3305 for a patent by TOM KUSIC as filed on 28 June 2002.

WITNESS my hand this
Twenty-ninth day of July 2003

J. Billingsley

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES

TANDEM POWERED POWER TILTING AIRCRAFT

TECHNICAL FIELD

This invention relates to the vertical take-off field of aviation.

BACKGROUND ART

Many versions of helicopters using tandem rotors have been constructed to date. What has been common to all such helicopters is that the lifting rotors have had to have variable pitch blades to allow control of the helicopters.

SUMMARY OF THE INVENTION

This invention provides an aircraft that can fly in a similar manner to a conventional tandem rotor helicopter but does not require a blade pitch varying mechanism.

DETAILED DESCRIPTION OF THE INVENTION

The aircraft has a main body that is longer than it is wider, a lifting mechanism at the front, which is the primary lifting mechanism, and another lifting mechanism at the rear, which is a secondary lifting mechanism.

The primary lifting mechanism is joined to the forward part of the main body of the aircraft by a tilt enabling joint, and the secondary lifting mechanism is joined to the aft part of the main body of the aircraft by another tilt enabling joint.

The tilt enabling joints provide the means to position the lifting mechanisms above the main body of the aircraft and the means to tilt the primary and secondary lifting mechanisms in a plurality of directions and angles in a controlled mannner relative to the main body of the aircraft. Referring to the tilt enabling joint that can tilt the primary lifting mechanism as a primary tilt enabling joint, the primary lifting mechanism can be tilted forward, rearward, and from side to side with respect to the main body of the aircraft by means of the primary tilt enabling joint. And referring to the tilt enabling joint that can tilt the secondary lifting mechanism as a secondary tilt enabling joint, the secondary lifting mechanism can be tilted forward, rearward, and from side to side with respect to the main body of the aircraft by means of the secondary tilt enabling joint.

Tilting of the lifting mechanisms is used as a means to control the aircraft instead of varying blade pitches. By using tilting of lifting mechanisms to control the aircraft during flight, combinations of different forms of lifting mechanisms can be used. For example, the front lifting mechanism can be in the form of a rotor with fixed pitch blades and an engine assembly, with the blades able to force air in a downward direction, while the rear lifting mechanism can be a jet engine which can force exhaust gases direclty downward or downward and sideways, depending on the tilting of the jet. By being able to tilt the jet forward and rearward, and from side to side, changes in exhaust direction can be achieved. Sideway directed exhaust can be used to counter the torque of the forward rotor during take off. Because the aircraft has a jet at the rear instead of a rotor, the downwash over the rear part of the body of the aircraft from rotor blades is avoided. As such wings can be fitted to the rear of the aircraft. On conventional helicopters wings have been proven to be useless due to downwash from rotor blades. With wings fitted to the current invention, the aircraft could gain substantial lift during high speed forward flight, reducing the need to rely on the jet at the rear for lift. By fitting the forward lifting rotor and engine to the main body of the aircraft with multiple tilt enabling joints, the forward lifting mechanism could be tilted 90 degrees forward during forward flight, thus overcoming the need for a counter torque mechanism during high speed forward flight. The jet can then be tilted into a horizontal position, adding to forward propulsion. The aircraft in effect can be transformed into a high speed forward flying aeroplane, using a massive sized rotor at the front acting as a propeller on an aeroplane and a jet at the rear for forward propulsion. The wings would provide lift, and ailerons on the wings could counter the torque from the main rotor during high speed forward flight.

With the primary lifting mechanism at the front of the aircraft comprising a rotor with a plurality of blades connected to the rotor, and the rotor being rotated by an engine assembly to force air to travel in a downward direction, the engine assembly can consist of a single engine or a plurality of engines.

Since the rotor blades don't have to be varied as in a conventional helicopter, a simple option could be to use a turboprop as the primary lifting mechanism, positioned on the primary tilt enabling joint such that during take-off air is forced in a downward direction by means of the blades that form part of the turboprop.

While the secondary lifting mechanism can in one form be a jet engine, it can in another form be a rotor with a plurality of blades connected to the rotor, with an engine assembly to rotate the rotor, and by rotation of the rotor force air in a downward direction by means of the blades as the blades travel around the rotor. The engine assembly can be a single engine or a plurality of engines. In another form the secondary lifting mechanism can be a turboprop.

Hence it becomes apparent that different types of lifting mechanisms can be combined on the aircraft.

In one form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, while the secondary lifting mechanism also comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly of the secondary lifting mechanism able to rotate the rotor of the secondary lifting mechanism and the blades of the secondary lifting mechanism connected to the rotor of the secondary lifting mechansim such that air can be forced to travel in a downward direction by means of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechansim.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, and the secondary lifting mechanism is a turboprop. which is positioned on the secondary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop.

In another form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the the blades rotating around the rotor, and the secondary lifting mechanism is a turboprop which is positioned on the secondary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, while the secondary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly of the secondary lifting mechanism able to rotate the rotor of the secondary lifting mechanism and the blades of the secondary lifting mechanism connected to the rotor of the secondary lifting mechansim such that air can be forced to travel in a downward direction by means of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechanism.

In another form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, and the secondary lifting mechanism is a jet engine in the form of a turbojet that can be tilted so that exhaust from the turbojet can be forced in a downward direction behind the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, and the secondary lifting mechanism is a jet engine in the form of a turbofan that can be tilted so that exhaust from the turbofan can be forced in a downward direction behind the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, and the secondary lifting mechanism is a jet engine in the form of a turbojet that can be tilted so that exhaust from the turbojet can be forced in a downward direction behind the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, and the secondary lifting mechanism is a jet engine in the form of a turbofan that can be tilted so that exhaust from the tuborfan can be forced in a downward direction behind the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, and the secondary lifting mechanism comprises two jet engines that can be tilted so that exhaust from the jet engines can be forced in a downward direction behind the main body of the aircraft, with each jet engine being a turbojet.

In another form of the aircraft the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, and the secondary lifting mechanism comprises two jet engines that can be tilted so that exhaust from the jet engines can be forced in a downward direction behind the main body of the aircraft, with each jet engine being a turbofan.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, and the secondary lifting mechanism comprises two jet engines that can be tilted so that exhaust from the jet engines can be forced in a downward direction behind the main body of the aircraft, with each jet engine being a turbofan.

In another form of the aircraft the primary lifting mechanism is a turboprop which is positioned on the primary tilt enabling joint such that air can forced in a downward direction by means of the blades of the turboprop, and the secondary lifting mechanism comprises two jet engines that can be tilted so that exhaust from the jet engines can be forced in a downward direction behind the main body of the aircraft, with each jet engine being a turbofan.

In one form of the aircraft where the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, the engine assembly consists of a single engine.

In another form of the aircraft where the primary lifting mechanism comprises an engine assembly, a rotor; and blades connected to the rotor, with the engine assembly able to rotate the rotor and the blades connected to the rotor such that air can be forced to travel in a downward direction by means of the blades rotating around the rotor, the engine assembly consists of two engines.

In one form of the aircraft where the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, and the engine assembly of the primary lifting mechanism consists of a single engine, a power transmission mechanism is connected to the engine of the primary lifting mechanism, by which power transmission mechanism the respective engine is able to rotate the rotor of the primary lifting mechanism.

In another form of the aircraft where the primary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, and the engine assembly of the primary lifting mechanism consists of two engines, a power transmission mechanism is connected to the engines of the primary lifting mechanism, by which power transmission mechanism the engines of the primary lifting mechansim are able to rotate the rotor of the primary lifting mechanism.

In one form of the aircraft where the secondary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor of the secondary lifting mechanism, the engine assembly of the secondary lifting mechanism consists of a single engine.

In another form of the aircraft where the secondary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor of the secondary lifting mechanism, the engine assembly consists of two engines.

In one form of the aircraft where the secondary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor of the secondary lifting mechanism, and the engine assembly consists of a single engine, a power transmission mechanism is connected to the engine of the secondary lifting mechanism, by which power transmission mechanism the respective engine is able to rotate the rotor of the secondary lifting mechanism.

In another form of the aircraft where the secondary lifting mechanism comprises an engine assembly, a rotor, and blades connected to the rotor, and the engine assembly of the secondary lifting mechanism consists of two engines, a power transmission mechanism is connected to the engines of the secondary lifting mechanism by which power transmission mechanism the engines of the secondary lifting mechanism are able to rotate the rotor of the secondary lifting mechanism.

The tilt enabling joints can comprise various components.

Some of the components are such that they hold the joint together while allowing the joint to have movement, forming a movement enabling assembly, while other components form an activating mechanism that can force movement between components of the movement enabling assembly.

In one form of the aircraft the movement enabling assembly of the primary tilt enabling joint is a universal joint and the activating mechanism comprises four of hydraulic actuators connected to the movement enabling assembly.

In another form of the aircraft the movement enabling assembly of the primary tilt enabling joint comprises a hinge assembly and the activating mechanism comprises a hydraulic actuating mechanism connected to the movement enabling assembly.

In another form of the aircraft the movement enabling assembly of the primary tilt enabling joint comprises two hinges transversely connected and the activating mechanism comprises four hydraulic actuators connected to the movement enabling assembly.

In one form of the aircraft the movement enabling assembly of the secondary tilt enabling joint is a universal joint and the activating mechanism comprises four hydraulic actuators connected to the movement enabling assembly.

In another form of the aircraft the movement enabling assembly of the secondary tilt enabling joint comprises a hinge assembly and the activating mechanism comprises a hydraulic actuating mechanism connected to the movement enabling assembly.

In another form of the aircraft the movement enabling assembly of the secondary tilt enabling joint comprises two hinges transversely connected and the activating mechanism comprises four hydraulic actuators connected to the movement enabling assembly.

In one form of the aircraft the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that only part of the primary lifting mechanism can be positioned in front of the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that the whole of the primary lifting mechanism can be positioned in front of the main body of the aircraft.

In one form of the aircraft the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that only a part of the primary lifting mechanism can be positioned above the main body of the aircraft.

In another form of the aircraft the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that the whole of the primary lifting mechanism can be positioned above the main body of the aircraft.

In one form of the aircraft the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that only part of the secondary lifting mechanism can be positioned behind the main body of the aircraft.

In another form of the aircraft the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that the whole of the secondary lifting mechanism can be positioned behind the main body of the aircraft.

In one form of the aircraft the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that only part of the secondary lifting mechanism can be positioned above the main body of the aircraft.

In another form of the aircraft the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that the whole of the secondary lifting mechanism can be positioned above the main body of the aircraft.

In another form of the aircraft an additional tilt enabling joint is used to connect the primary tilt enabling joint to the main body of the aircraft to allow a greater amount of tilting movement between the primary lifting mechansim and the main body of the aircraft. The additional tilt enabling joint, which is a third tilt enabling joint, comprises a movement enabling assembly that is a hinge, and the activating mechansim comprises two hydraulic actuators connected to the movement enabling assembly and the main body of the aircraft.

In one form of the aircraft the secondary lifting mechanism is pivotly connected to the secondary tilt enabling joint such that the secondary lifting mechanism can be rotated on the secondary tilt enabling joint without the secondary tilt enabling joint having to move. In a form of the aircraft this rotating ability is achieved by means of a metal plate being used to join the secondary lifting mechanism to the upper section of the secondary tilt enabling joint, with the metal plate being joined to the upper section of the secondary tilt enabling joint by means of a large rivet, and an electric motor that turns a wheel is used to rotate the metal plate on the secondary tilt enabling joint, with the electric motor connected to the secondary tilt enabling joint and the wheel.

In another form of the aircraft the secondary tilt enabling joint is connected to the main body of the aircraft such that the secondary tilt enabling joint can be rotated on the aft end of the main body of the aircraft without components of the secondary tilt enabling joint having to move with respect to one another. In a form of the aircraft this rotating ability is achieved by means of a metal plate being used to join the lower section of the secondary tilt enabling joint to the upper part of the aft end of the main body of the aircraft, with the metal plate being joined to the upper part of the main body by means of a large rivet which protrudes from inside of the main body of the aircraft. An electric motor that turns a wheel is used to rotate the metal plate that the secondary tilt enabling joint is attached to, with the electric motor connected to the upper section of the main body of the aircraft.

Another variation of the aircraft is to use any one of the primary lifting mechanisms as described above, connected to the main body of the aircraft by a tilt enabling joint which provides the means to tilt the primary lifting mechanism in a plurality of directions and angles in a controlled manner, but have the secondary lifting mechanism rigidly joined to the main body of the aircraft, with the secondary lifting mechanism comprising a jet engine or a plurality of jet engines, with exhaust gas from the jet engine, (or jet engines if more than one engine is used) channelled through a nozzle which can direct exhaust gas to travel in a downward direction, and which nozzle is connected to the main body of the aircraft such that the nozzle is able to be swivelled in lateral directions relative to the main body of the aircraft in a controlled manner and such that the said exhaust gas can be directed to travel in a lateral direction relative to the main body of the aircraft.

In one form of the aircraft where a swivelling nozzle is connected to the main body of the aircraft, to gain forward propulsion from the secondary lifting mechanism the swivelling nozzle referred to above is such that it can be swivelled in a forward and rearward direction as well as in lateral directions relative to the main body of the aircraft.

In another form of the aircraft where a swivelling nozzle is used direct jet engine(s) exhaust gas in lateral directions relative to the main body of the aircraft, to gain forward propulsion from the secondary lifting mechanism an additional nozzle is connected to the main body of the aircraft such that exhaust gas from the jet engine(s) can be directed to travel in a rearward direction relative to the main body of the aircraft through the additional nozzle.

In one form of the aircraft where an additional nozzle is connected to the main body of the aircraft the additional nozzle is fixed in position relative to the main body of the aircraft.

In one form of the aircraft where an additional nozzle is connected to the main body of the aircraft the additional nozzle is connected to the main body of the aircraft such that it can be swivelled in a forward and rearward direction relative to the main body of the aircraft in a controlled manner.

To control the forward propulsion achieved by means of exhaust gas travelling though the additional nozzle, a means for restricting exhaust gas from exiting through the additional nozzle is used. Various means for restricting the exhuast from exiting through the additional nozzle are possible.

One way to restrict exhaust gas from exiting through the additional nozzle is for the additional nozzle to be such a nozzle that the additional nozzle can be converged and diverged in a controlled manner, such that the said exhaust gas can be directed to travel in a rearward direction from the aft end of the main body of the aircraft by the additional nozzle when the addjtional nozzle is in a diverged state. By closing the additional nozzle through a converging motion, exhaust gas could be directed through the swivelling nozzle.

Another way to restrict exhaust gas from exiting through the additional nozzle is to connect a flap to the additional nozzle, with the flap connected to the additional nozzle such that the flap can be moved in a controlled manner such that the flap can partially or fully block exhaust gas from exiting the additional nozzle.

Another way to restrict exhaust gas from exiting through the additional nozzle is restrict exhaust gas from reaching the additional nozzle. In one form of the aircraft the means for restricting exhaust gas from reaching the additional nozzle is in the form of a flap that is connected to the main body of the aircraft such that the flap can be moved in a controlled manner such that the flap can restrict exhaust gas from reaching the additional nozzle.

Alternatively, a plurality of swivelling nozzles can be connected to the main body such that at least one swiveling nozzle can be used to direct exhaust gas from the jet engine(s) to travel in a lateral directions while another nozzle can direct exhaust gas from the jet engine (s) in a downward direction or in a rearward direction, or in a rearward and downward direction.

In another variation of the aircraft, the aircraft comprises any one of the primary lifting mechanisms as described above, connected to the main body of the aircraft by a tilt enabling joint which provides the means to tilt the primary lifting mechanism in a plurality of directions and angles in a controlled manner, but the secondary lifting mechanism is rigidly joined to the main body of the aircraft, with the secondary lifting mechanism comprising a jet engine or a plurality of jet engines, and which secondary lifting mechanism comprises a means for vectoring the thrust from the jet engine (or jet engines if a plurality of jet engines form part of the secondary lifting mechanism).

In another variation of the aircraft, the aircraft comprises any one of the primary lifting mechanisms as described above, connected to the main body of the aircraft by a tilt enabling joint which provides the means to tilt the primary lifting mechanism in a plurality of directions and angles in a controlled manner, but the secondary lifting mechanism is rigidly joined to the main body of the aircraft, with the secondary lifting mechanism comprising a jet engine or a plurality of jet engines, and which main body of the aircraft comprises a means for vectoring the thrust from the secondary lifting mechanism.

Figure 1 shows one form of the aircraft according to this invention. The aircraft has a main body 1 with a forward end 2 and an aft end 3. The pirmary lifting mechanism 4 comprises two blades 5, 6, connected to a rotor 7, which rotor 7 is rotated by means of an engine assembly 8 comprising one engine. The primary lifting mechanism 4 is connected to the top of the forward end 2 of the main body 1 by means of the primary tilt enabling joint 9 which has a movement enabling assembly in the form of a universal joint 10. A hydraulic actuator 11 is able to move the upper section 12 of the primary tilt enabling joint 9 forward and the hydraulic actuator 13 is able to move the upper section 12 of the primary tilt enabling joint in a rearward direction, while another hydraulic actuator 14 is connected to the main body 1 of the aircraft so that it is on the left side of the universal joint 10 and so that it is able to tilt a metal platform 15 which forms part of the universal joint 10 to the right side of the main body (Refer Figure 2). Another hydralic actuator 16 is connected to the main body 1 of the aircraft so that it is on the right side of the universal joint and so that it can tilt the metal platform 15 to the left side of the main body of the aircraft. The hydraulic actuator 14 is positioned behind the universal joint 10 but is further forward on the main body than is the hydraulic actuator 16. The hydraulic actuators 14 and 16 are connected to the main body 1 and the metal platform 15 that forms part of the universal joint 10. The hydraulic actuators 11 and 13 are connected to the metal platform 15 and the upper section 12 of the primary tilt enabling joint 9. The secondary lifting mechanism 17 comprises blades 18, 19, connected to a rotor 20, which rotor 20 is rotated by means of an engine assembly 21 that comprises a single engine. The secondary lifting mechanism 17 is connected to the top of the aft end 3 of the main body 1 by means of the secondary tilt enabling joint 22 which has a movement enabling assembly in the form of a universal joint 23. A hydraulic actuator 24 is able to move the upper section 25 of the secondary tilt enabling joint 22 rearward with respect to the main body 1 and the hydraulic actuator 26 is able to move the upper section 25 of the secondary tilt enabling joint in a forward direction, while another hydraulic actuator 27 is connected to the main body 1 of the aircraft so that it is on the left side of the universal joint 23 and so that it is able to tilt a metal platform 28 which forms part of the universal joint 23 to the right side of the main body. Another hydraulic actuator 29 is connected to the main body 1 of the aircraft so that it is on the right side of the universal joint 23 so that it can tilt the metal platform 28 to the left side of the main body of the aircraft. The hydraulic actuator 27 is positioned further forward on the main body than is the hydraulic actuator 29. The hydraulic actuators 27 and 29 are connected to the main body 1 and the metal platform 28 that forms part of the universal joint 23. The hydraulic actuators 24 and 26 are connected to the metal platform 28 and the upper section 25 of the secondary

tilt enabling joint 22. The universal joint 10 of the primary tilt enabling joint 9 is formed by transversely connecting hinges 30 and 31 by means of the metal platform 15. The universal joint 23 of the secondary tilt enabling joint 22 is formed by transversely connecting hinges 32 and 33 by means of the metal platform 28. The hinges 30 and 32 are joined to the upper part of main body 1 of the aircraft. By forcing air in a downward direction by means of the primary lifting mechanism and the secondary lifting mechanism the aircraft is able to achive vertical take-off. By tilting the primary lifting mechanism forward by means of the primary tilt enabling joint and tilting the secondary lifting mechanism forward by means of the secondary tilt enabling joint the aircraft is able to achieve forward flight as air is force downward and to the rear of the aircraft by the primary lifting mechanism and secondary lifting mechanism. The primary lifting mechansim and the secondary lifting mechanism are arranged in tandem order above the main body 1, with primary lifting mechanism forward of the secondary lifting mechanism. The primary tilt enabling joint and the secondary tilt enabling joint are also in tandem order on top of the main body 1, with the primary tilt enabling joint in front of the secondary tilt enabling joint. The blades of the primary lifting mechanism protrude in front of the forward end of the main body 1.

Figure 2 shows the lower part of the primary tilt enabling joint 9 at the forward end of the main body 1 of the aircraft of Figure 1. The view is from behind and shows the universal joint 10 as it would appear from behind, and the positioning of hydarulic actuators 14 and 16, with hydraulic actuator 14 to the left of the universal joint 10 and hydraulic actuator 16 to the right of the universal joint 10. The hydraulic actuators are connected to the metal plate 15 that forms part of the universal joint.

The hydraulic actuators 27 and 29 of the secondary tilt enabling joint 22 of Figure 1 are distanced in the same manner from the universal joint 23 as the hydraulic actuators 14 and 16 are distanced from the universal joint 10 of the primary tilt enabling joint.

Figure 3 shows another form of the aircraft. The aircraft has a main body 1 as in figure 1, with a forward end 2 and an aft end 3. The primary tilt enabling joint 9 is the same as in Figure 1 and the secondary tilt enabling joint 22 is the same as in Figure 1. The primary lifting mechanism 4 is a turboprop 34 which can force air in a downward direction by means of the blades 35 and 36. The secondary lifting mechanism 17 is another turboprop 37 which can force air in a downward direction by means of the blades 38 and 39.

Figure 4 shows another form of the aircraft. The aircraft has a main body 1 with a forward end 2 and rear end 3. The primary lifting mechanism 4 is the same as in Figure 1 and the primary tilt enabling joint 9 is the same as in Figure 1. The secondary lifting mechanism 40 is a jet engine. The jet engine 4 is a turbojet and is attached to a hinge 41. The turbojet 40 is joined to metal plate 42 that forms of the hinge 41. A lower metal plate 43 forms part of the hinge 41. The lower metal plate 43 is connected to another hinge 44 that is positioned longitudinally on top of the main body 1. The lower hinge 44 is joined to the the upper part of the main body 1 of the aircraft. The hinges 41 and 44 are transversely connected. A hydraulic actuator 45 is connected to the metal plates 42 and 43 of hinge 41 such that it is able to tilt the turbojet 40 in a rearward direction by pushing the metal plate 42 in a rearward direction. A hydraulic actuator 46 is connected to the lower metal plate 43 and the upper part of the main body and is connected to the main body 1 of the aircraft so that it is on the left of the lower hinge 44 such that it can tilt the lower plate 43 to the right. Another hydraulic actuator 47 is connected to the upper part of the main body and the lower metal plate 43, and is connected to the main body 1 of the aircraft so that it is on the right side of the lower hinge 44 such that it can tilt the lower plate 43 to the left side of the main body 1. The metal plates 42, 43, the hinges 41 and 44, the and the hydarulic actuators 45, 46, and 47 form the secondary tilt enabling joint 22. The jet engine 40 is shown to be partly behind the main body 1 of the aircraft angled such that it forces exhaust gases in a downward direction through the rear 48 of the turbojet 40. A turbofan jet engine could be used in place of the turbojet 40 positioned in the same manner as the turbojet 40.

Figure 5 shows the front of lower part of the secondary tilt enabling joint 22 of Figure 4 as veiwed from in front of the secondary tilt enabling joint 22. Figure 5 shows the lower hinge 44 connected to the lower plate 43 of Figure 4 and the main body 1 of the aircraft, and the distancing of the hydraulic actuators 46 and 47 from the lower hinge 44.

Figure 6 shows the aircraft of Figure 4 fitted with an additional tilt enabling joint 49, which is a third tilt enabling joint. Referring to the additional tilt enabling joint as a third tilt enabling joint, the third tilt enabling joint 49 is in the form of a hinge 50 which is connected to the upper part of the forward end 2 of the main body 1 of the aircraft. A hydraulic actuator 51 that forms part of the third tilt enabling joint is able to tilt the upper section 52 of the third tilt enabling joint in a forward direction. The primary tilt enabling joint 9 is connected to the upper section of the 52 of the third tilt enabling joint and is shown in a state of forward tilt. Hydraulic actuator 53 forms part of the third tilt enabling joint and is able to tilt the upper section 52 of the third tilt enabling joint in a rearward direction. The hydraulic actuator 51 is connectd to a stem 54 protruding from the hinge 50 and to the upper part of the main body of the aircraft. The hydraulic actuator 53 is connected to the stem 54 and the upper part of forward end 2 of the main body of the aircraft.

Figure 7 shows a modified form of the aircraft of Figure 6, with the third tilt enabling joint 49 in a forward tilt, the primary tilt enabling joint 9 in a forward tilt, and the jet engine 40 in a forward tilt. Figure 7 shows that the whole of the primary lifting mechanism is in front of the main body of the aircraft. In Figure 7 the aircraft is different to the aircraft in Figure 6 in that it has the lower hinge 44 connected to a metal plate 55. The metal plate 55 is connected to a large rivet 56 which is contained within the main body and protrudes from the main body 1 through an opening 57 in the upper part of the main body. The metal plate 55 is supported on metal blocks 58 and 59 such that the metal plate 55 can be rotated by an electric motor 60 rotating a wheel 61. Hydraulic actuators 46 and 47 are connected to the metal plate 55 and are in the same position with respect to the hinge 44 as they are in the aircraft of Figure 4. Figure 7 also shows a fin 62 attached to the jet engine 40. The jet is shown further behind the on the aft end of the main body of the aircraft. The jet engine 40 could now be tilted in rearward direction so that it could be placed behind the main body of the aircraft.

Figure 8 shows the aircraft of Figure 7, now fitted with wheel assemblies 63 and 64. Wings can be fitted to the main body of the aircraft. Figure 6 shows the position of a wing 65 on the left side of the main body of the aircraft.

Figure 9 shows a variation of the aircraft of Figure 4. The upper metal plate 42 of the hinge 41 is longer, the jet engine 40 is attached to another metal plate 66, and a large rivet 67 now joins the metal plate 66 to the metal plate 42, which rivet connects the metal plates 42 and 66 such that the metal plate 66 can pivotly rotate with respect to the metal plate 42. A hydraulicly activated rotating arm 68 is used to rotate the metal plate 66 with respect to the metal plate 42. The rivet 67 and the hydraulicly activated rotating arm 68 combined with the additonal metal plate 66 hence form a rotation enabling mechansim by which the jet engine 40 can be pivotly rotated with respect to the secondary tilt enabling joint.

Figures 1, 3, 4 and 9 show that the aircraft can take of and land vertically. Figure 8 shows that the aircraft can also take off and land as a conventional forward flying aeroplane when fitted with wheels, wings, and when the tilt enabling joints have tilted the primary lifting mechanism and the secondary lifting mechanism forward. The aircraft could take-off while moving forward as an areoplane and land as a helicopter, and vice versa.

Figure 10 shows another form of the aircraft, with the whole of the primary lifting mechanism 4 now in front of and above the forward end 2 of the main body 1. The secondary lifting mechanism 17 is now completely above and behind the aft end of the main body 1. The primary tilt enabling joint 9 and the secondary tilt enabling joint 22 are combinations of components of tilt enabling joints shown in previous figures. An addition is the extension platform 69 shown in respect of the primary tilt enabling joint 9 and the extesnion platform 70 of the secondary tilt enabling joint 22.

ABSTRACT

An aircraft with a long body 1 which has a forward end 2 and an aft end 3, which is able to achieve vertical take-off by means of a tiltable rotor and blade assembly 4 at the forward part of the aircraft and a tiltable turbojet 40 at the rear of the aircraft. The rotor and blade assembly is rotated by an engine assembly, with the engine assembly, the rotor and blades all positioned on top of a multi-directional tilt enabling joint 9. The tubojet is fitted to a multi-directional tilt enabling joint 22 to allow control of lateral movement of the aircraft as well as providing vertical lift and forward propulsion during forward flight.

What I claim as my invention is:

1. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,
and which primary lifting mechanism comprises a powerplant as a means for providing downwardly extending thrust to the aircraft, and which secondary lifting mechanism comprises a powerplant as a means for providing downwardly extending thrust to the aircraft,
and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting

mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

2. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,
and which primary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the said blades connected to the rotor, and which said engine assembly is able to rotate the said rotor, with the blades connected to the rotor such that when the rotor is rotated by the said engine assembly air can be forced in a downward direction by means of the blades rotating around the rotor, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft by forcing air in a downward direction by way of the blades rotating around the rotor,
and the secondary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the blades of the secondary lifting mechanism connected to the rotor of the secondary lifting mechansim, and which engine assembly of the secondary lifting mechanism is able to rotate the rotor of the secondary lifting mechanism, with the blades of the secondary lifting mechanism

connected to the rotor of the secondary lifting mechanism such that when the rotor of the secondary lifting mechanism is rotated by the engine assembly of the secondary lifting mechanism air can be forced in a downward direction by means of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechanism, with the secondary lifting mechanism able to exert an upward force on the aft end of the main body of the aircraft by forcing air in a downward direction by way of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechanism,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt

enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

3. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,

which primary lifting mechanism is a turboprop, and which primary lifting mechanism is attached to the primary tilt enabling joint such that air can be forced in a downward direction by the primary lifting mechanism, and such that by forcing air in a downward direction the primary lifting mechanism is able to exert an upward force on the forward end of the main body of the aircraft,

and the secondary lifting mechanism is a turboprop, which secondary lifting mechansim is attached to the secondary tilt enabling joint such that air can be forced in a downward direction by the secondary lifting mechanism, and such that by forcing air in a downward direction the secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in

lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

4. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,

and which primary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the said blades connected to the rotor, and which said engine assembly is able to rotate the said rotor, with the blades connected to the rotor such that when the rotor is rotated by the said engine assembly air can be forced in a downward direction by means of the blades rotating around the rotor, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft by forcing air in a downward direction by way of the blades rotating around the rotor,

and the secondary lifting mechanism consists of a jet engine, which jet engine is attached to the secondary tilt enabling joint such that the jet engine is able to force exhaust gas to travel in a downward direction and such that by forcing exhaust gas to travel in a downward direction the jet engine can exert an upward force on the aft end of the main body,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said

additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

5. The aircraft of claim 4 wherein the said jet engine is a turbojet.

6. The aircraft of claim 4 wherein the said jet engine is a turbofan.

7. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism

and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,

and which primary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the said blades connected to the rotor, and which said engine assembly is able to rotate the said rotor, with the blades connected to the rotor such that when the rotor is rotated by the said engine assembly air can be forced in a downward direction by means of the blades rotating around the rotor, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft by forcing air in a downward direction by way of the blades rotating around the rotor,

and the secondary lifting mechanism consists of a plurality of jet engines, which jet engines are attached to the secondary tilt enabling joint such that the jet engines are able to force exhaust gas to travel in a downward direction and such that by forcing exhaust gas to travel in a downward direction the jet engines can exert an upward force on the aft end of the main body,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a

controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

8. The aircraft of claim 7 wherein the said jet engines are turbojets.

9. The aircraft of claim 7 wherein the said jet engines are turbofans.

10. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,
which primary lifting mechanism is a turboprop, and which primary lifting mechanism is attached to the primary tilt enabling joint such that air can be forced in a downward direction by the primary lifting mechanism, and such that by forcing air in a downward direction the primary lifting mechanism is able to exert an upward force on the forward end of the main body of the aircraft,
and the secondary lifting mechanism consists of a jet engine, which jet engine is attached to the secondary tilt enabling joint such that the jet engine is able to force exhaust gas to travel in a downward direction and such that by forcing exhaust gas to travel in a downward direction the jet engine can exert an upward force on the aft end of the main body,
and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the

aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

11. The aircraft of claim 9 wherein the said jet engine is a turbojet.

12. The aircraft of claim 9 wherein the said jet engine is a turbofan.

13. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,
which primary lifting mechanism is a turboprop,
and which primary lifting mechanism is attached

to the primary tilt enabling joint such that air can be forced in a downward direction by the primary lifting mechanism, and such that by forcing air in a downward direction the primary lifting mechanism is able to exert an upward force on the forward end of the main body of the aircraft,
and the secondary lifting mechanism consists of a plurality of jet engines, which jet engines are attached to the secondary tilt enabling joint such that the jet engines are able to force exhaust gas to travel in a downward direction and such that by forcing exhaust gas to travel in a downward direction the jet engines can exert an upward force on the aft end of the main body,
and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting

mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

14. The aircraft of claim 13 wherein the said jet engines are turbojets.

15. The aircraft of claim 13 wherein the said jet engines are turbofans.

16. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,

and which primary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the said blades connected to the rotor, and which said engine assembly is able to rotate the said rotor, with the blades connected to the rotor such that when the rotor is rotated by the said engine assembly air can be forced in a downward direction by means of the blades rotating around the rotor, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft by forcing air in a downward direction by way of the blades rotating around the rotor,

and the secondary lifting mechanism is a turboprop, which secondary lifting mechansim is attached to the secondary tilt enabling joint such that air can be forced in a downward direction by the secondary lifting mechanism, and such that by

forcing air in a downward direction the secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

17. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, with the primary lifting mechanism and the secondary lifting mechanism connected to the main body of the aircraft in tandem order, and with the aircraft able to achieve flight by means of upward forces exerted on the main body of the aircraft by the primary lifting mechanism and the secondary lifting mechanism while the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft in tandem order,

which primary lifting mechanism is a turboprop, and which primary lifting mechanism is attached to the primary tilt enabling joint such that air can be forced in a downward direction by the primary lifting mechanism, and such that by forcing air in a downward direction the primary lifting mechanism is able to exert an upward force on the forward end of the main body of the aircraft,

and which secondary lifting mechanism comprises a rotor, an engine assembly, and a plurality of blades, with the blades of the secondary lifting mechanism connected to the rotor of the secondary lifting mechansim, and which engine assembly of the secondary lifting mechnaism is able to rotate the rotor of the secondary lifting mechanism, with the blades of the secondary lifting mechanism connected to the rotor of the secondary lifting mechanism such that when the rotor of the secondary lifting mechanism is rotated by the engine assembly of the secondary lifting mechanism air can be forced in a downward direction by means of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechanism, with the secondary lifting mechanism able to exert an upward force on the aft end of the main body of the aircraft by forcing air in a downward direction by way of the blades of the secondary lifting mechanism rotating around the rotor of the secondary lifting mechanism,

and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by

altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, and which said tilt enabling joint is a primary tilt enabling joint, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the primary tilt enabling joint, and which secondary lifting mechansim is connected to the main body of the aircraft by an additional tilt enabling joint, which said additional tilt enabling joint is a secondary tilt enabling joint, and which said secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that during flight of the aircraft the secondary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the secondary lifting mechanism can be tilted in lateral directions relative to the main body during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the secondary lifting mechanism relative to the main body, and which secondary tilt enabling joint is such that the secondary lifting mechanism can be tilted in a controlled manner in a lateral direction with respect to the main body of the aircraft during flight of the aircraft that is opposite to a lateral direction that the primary lifting mechanism can be tilted in with respect to the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft, and which secondary lifting mechanism is able to exert an upward force on the aft end of the main body of the aircraft through the secondary tilt enabling joint, with the primary tilt enabling joint and the secondary tilt enabling joint connected to the main body of the aircraft, and with the aircraft able to achieve flight by means of an upward force exerted on the main body of the aircraft by the primary lifting mechanism through the primary tilt enabling joint and an upward force exerted on the main body of the aircraft by the secondary lifting mechanism through the secondary tilt enabling joint while the primary lifting mechanism and the secondary lifting mechanism are maintained in tandem order, and with controlled lateral tilting of the primary lifting mechanism and the secondary lifting mechanism able to occur during flight while the primary lifting mechansim and the secondary lifting mechanism are maintained in tandem order.

18. The aircraft of claim 2 wherein the engine assembly of the primary lifting mechanism comprises a single engine and the engine assembly of the secondary lifting mechanism comprises a single engine.

19. The aircraft of claim 2 wherein the engine assembly of the primary lifting mechanism comprises a plurality of engines and the engine assembly of the secondary lifting mechanism comprises a single engine.

20. The aircraft of claim 2 wherein the engine assembly of the primary lifting mechanism comprises a single engine and the engine assembly of the secondary lifting mechanism comprises a plurality of engines.

21. The aircraft of claim 2 wherein the engine assembly of the primary lifting mechanism comprises a plurality of engines and the engine assembly of the secondary lifting mechanism comprises a plurality of engines.

22. The aircraft of claim 4 wherein the engine assembly of the primary lifting mechanism comprises a single engine.

23. The aircraft of claim 4 wherein the engine assembly of the primary lifting mechanism comprises a plurality of engines.

24. The aircraft of claim 7 wherein the engine assembly of the primary lifting mechanism comprises a single engine.

25. The aircraft of claim 7 wherein the engine assembly of the primary lifting mechanism comprises a plurality of engines.

26. The aircraft of claim 16 wherein the engine assembly of the primary lifting mechanism comprises a single engine.

27. The aircraft of claim 16 wherein the engine assembly of the primary lifting mechanism comprises a plurality of engines.

28. The aircraft of claim 17 wherein the engine assembly of the secondary lifting mechanism comprises a single engine.

29. The aircraft of claim 17 wherein the engine assembly of the secondary lifting mechanism comprises a plurality of engines.

30. The aircraft of any one of claims 1 to 29 wherein the primary lifting mechanism and the secondary lifting mechanism are connected to the main body of the aircraft such that the primary lifting mechanism is further forward with respect to the main body of the aircraft than is the position of the secondary lifting mechanism with respect to the main body of the aircraft.

31. The aircraft of any one of claims 1 to 30 wherein the primary lifting mechanism is connected to the main body of the aircraft by means of the primary tilt enabling joint such that the primary lifting mechanism can be tilted in a forward direction and a rearward direction relative to the main body of the aircraft, in a controlled manner, by means of the primary tilt enabling joint.

32. The aircraft of any one of claims 1 to 31 wherein the secondary lifting mechanism is connected to the main body of the aircraft by means of the secondary tilt enabling joint such that the secondary lifting mechanism can be tilted in a forward and a rearward direction relative to the main body of the aircraft, in a controlled manner, by means of the secondary tilt enabling joint.

33. The aircraft of any one of claims 1 to 32 wherein the primary lifting mechanism is connected to the main body by the primary tilt enabling joint such that the primary lifting mechanism can be positioned above the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft.

34. The aircraft of any one of claims 1 to 33 wherein the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that the primary lifting mechanism can be positioned in front of the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft.

35. The aircraft of any one of claims 1 to 34 wherein the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that only a part of the primary lifting mechanism can be positioned above the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft.

36. The aircraft of any one of claims 1 to 35 wherein the primary lifting mechanism is connected to the main body of the aircraft by the primary tilt enabling joint such that only a part of the primary lifting mechanism can be positioned in front of the main body of the aircraft by means of the primary tilt enabling joint during flight of the aircraft.

37. The aircraft of any one of claims 1 to 36 wherein the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that the secondary lifting mechanism can be positioned above the aft end of the main body of the aircraft by means of the secondary tilt enabling joint during flight of the aircraft.

38. The aircraft of any one of claims 1 to 37 wherein the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that the secondary lifting mechanism can be positioned behind the main body of the aircraft by means of the secondary tilt enabling joint during flight of the aircraft.

39. The aircraft of any one of claims 1 to 38 wherein the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that only a part the secondary lifting mechanism can be positioned behind the main body of the aircraft by means of the secondary tilt enabling joint during flight of the aircraft.

40. The aircraft of any one of claims 1 to 39 wherein the secondary lifting mechanism is connected to the main body of the aircraft by the secondary tilt enabling joint such that only a part of the secondary lifting mechanism can be positioned above the main body of the aircraft by means of the secondary tilt enabling joint during flight of the aircraft.

41. The aircraft of any one of claims 1 to 40 wherein the primary tilt enabling joint comprises a movement enabling assembly that enables the primary tilt enabling joint to move and a tilt activating mechanism that can cause and control the movement of the primary tilt enabling joint, and the secondary tilt enabling joint comprises a movement enabling assembly that allows the secondary tilt enabling joint to move and a tilt activating mechanism that causes and controls the movement of the secondary tilt enabling joint to occur, which movement enabling assembly of the secondary tilt enabling joint is a secondary movement enabling assembly, and which said tilt activating mechanism of the secondary tilt enabling joint is a secondary tilt activating mechanism.

42. The aircraft of claim of 41 wherein the movement enabling assembly of the primary tilt enabling joint is a universal joint and the tilt activating mechanism of the primary tilt enabling joint comprises as plurality of hydraulic actuators connected to the universal joint of the primary tilt enabling joint.

43. The aircraft of claim of 41 wherein the movement enabling assembly of the primary tilt enabling joint comprises a plurality of hinges transversely connected to one another and the tilt activating mechanism of the primary tilt enabling joint comprises as plurality of hydraulic actuators connected to the movement enabling assembly of the primary tilt enabling joint.

44. The aircraft of any one of claims 1 to 43 wherein the movement enabling assembly of the secondary tilt enabling joint is a universal joint, with the tilt activating mechanism of the secondary tilt enabling joint comprising a plurality of hydraulic actuators connected to the universal joint of the secondary tilt enabling joint.

45. The aircraft of any one of claims 1 to 43 wherein the movement enabling assembly of the secondary tilt enabling joint comprises a plurality of hinges transversely connected to one another with the tilt activating mechanism of the secondary tilt enabling joint comprising a plurality of hydraulic actuators connected to the movement enabling assembly of the secondary tilt enabling joint.

46. The aircraft of any one of claims 1 to 40 wherein the primary tilt enabling joint comprises a plurality of movement enabling assemblies that enable the primary tilt enabling joint to have a tilt motion and a plurality of tilt activating mechanisms that can cause and control the movement of the primary tilt enabling joint, and the secondary tilt enabling joint comprises a plurality of movement enabling assemblies that allow the secondary tilt enabling joint to move and a plurality of tilt activating mechanisms that can cause and control the movement of the secondary tilt enabling joint.

47. The aircraft of any one of claims 1 to 46 wherein the secondary lifting mechanism is connected to the the secondary tilt enabling joint by a rotating mechanism such that during flight of the aircraft the secondary lifting mechanism can be rotated in a controlled manner relative to the secondary tilt enabling joint by means of the rotating mechanism.

48. The aircraft of any one of claims 1 to 46 wherein the secondary tilt enabling joint is connected to the main body of the aircraft by a rotating mechanism such that during flight of the aircraft the secondary tilt enabling joint can be rotated relative to the main body of the aircraft in a controlled manner by means of the rotating mechanism.

49. The aircraft of any one of claims 1 to 48 wherein a fin is connected to the secondary lifting mechanism such that the fin protrudes outward from the secondary lifting mechanism.

50. The aircraft of any one of claims 1 to 49 wherein the primary tilt enabling joint is connected to the main body of the aircraft by a tilt enabling joint, which said tilt enabling joint that connects the primary tilt enabling joint to the main body is a third tilt enabling joint, and which said third tilt enabling joint is such that the primary tilt enabling joint can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, by means of the third tilt enabling joint.

51. The aircraft of claim 50 wherein the third tilt enabling joint is such that the primary tilt enabling joint can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, by means of the third tilt enabling joint without components of the primary tilt enabling joint having to move with respect to one another.

52. The aircraft of any one of claims 50 or 51 wherein the third tilt enabling joint comprises a movement enabling assembly that enables the third tilt enabling joint to move and a tilt activating mechanism that can cause and control the movement of the third tilt enabling joint.

53. The aircraft of claim 52 wherein the movement enabling assembly of the third tilt enabling joint comprises a universal joint and the tilt activating comprises a plurality of hydraulic actuators.

54. The aircraft of any one of claims 1 to 53 wherein by means of the secondary tilt enabling joint the secondary lifting mechansim can be placed in a position such that no part of the secondary lifting mechanism is in behind of the main body of the aircraft.

55. The aircraft of any one of claims 1 to 54 wherein by means of the primary tilt enabling joint the primary lifting mechanism can be placed in a position such that no part of the primary lifting mechanism is in front of the main body of the aircraft.

56. An aircraft with a main body, a primary lifting mechanism and a secondary lifting mechanism, which main body has a forward end and an aft end, and which primary lifting mechanism comprises a powerplant as a means for providing downwardly extending thrust to the aircraft, and which primary lifting mechanism is connected to the main body of the aircraft by a tilt enabling joint such that during flight of the aircraft the primary lifting mechanism can be tilted in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner, and such that the primary lifting mechanism can be tilted in lateral directions relative to the main body of the aircraft during flight of the aircraft, and such that a direction of travel of the aircraft during flight can be altered by altering the lateral direction or angle of tilt of the primary lifting mechanism relative to the main body of the aircraft, with the primary lifting mechanism able to exert an upward force on the forward end of the main body of the aircraft through the tilt enabling joint, and which secondary lifting mechanism comprises a powerplant as the means for providing thrust to the aircraft, which secondary lifting mechanism is connected to the main body of the aircraft such that the secondary lifting mechanism can direct thrust in a downward direction thorough a nozzle, which nozzle is connected to the main body of the aircraft such that the nozzled can be swivled in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner.

57. The aircraft of calim 56 wherein the an additional nozzle is connected to the main body of the aircraft through which thrust can be directed by the secondary lifting mechanism.

58. The aircraft of claim 57 wherein the said additional nozzle is connected to the main body of the aircraft such that it can be swivled in a plurality of directions and angles relative to the main body of the aircraft, in a controlled manner.

59. The aircraft of any one of claims 57 or 58 wherein a flap is connected to the main body of the aircraft, which flap is connected to the main body of the aircraft such that if can be moved in a controlled manner, and such the flap is able to restrict thrust extending from the secondary lifting mechanism through the additional nozzle.

Tom Kusic

18 March, 2002

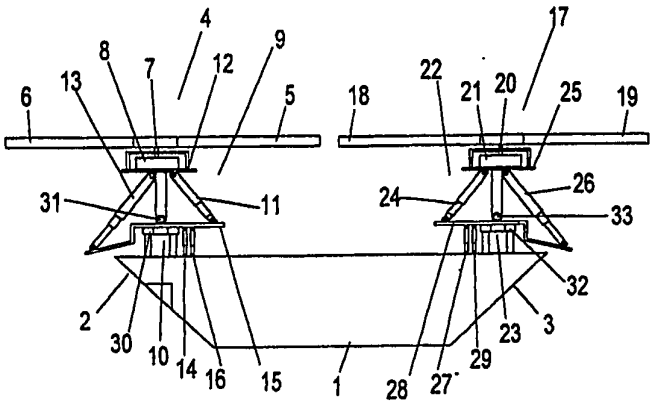
4
8
7
12
9
6
13
5
18
22
21
20
17
25
19
31
11
24
26
33
32
2
30
10
14
16
15
1
28
27
29
23
3

FIG. 1

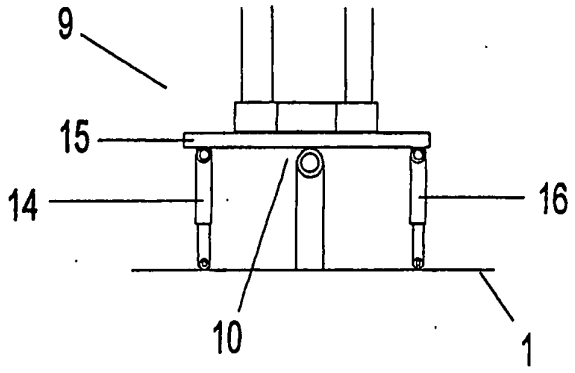
9
15
14
16
10
1

FIG. 2

3/10

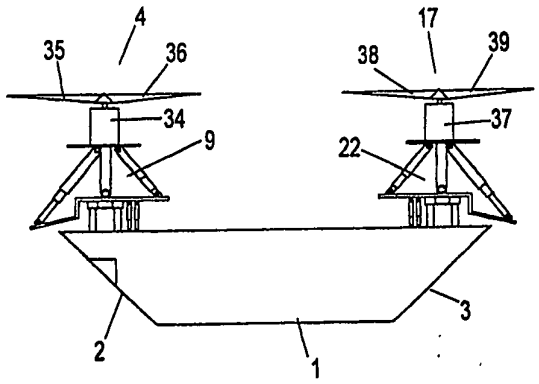

FIG. 3

4/10

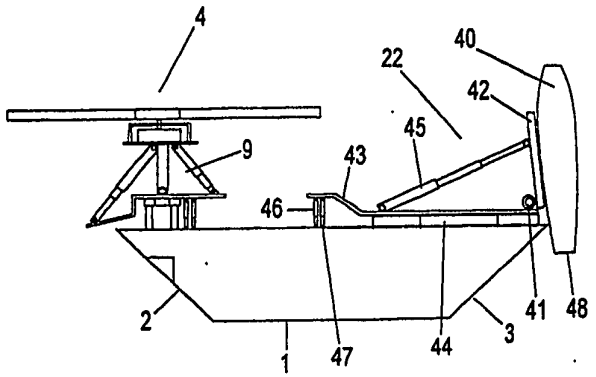

FIG. 4

5/10

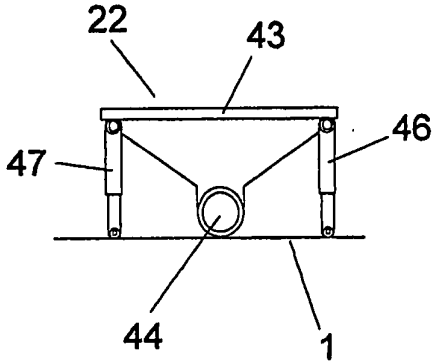

FIG. 5

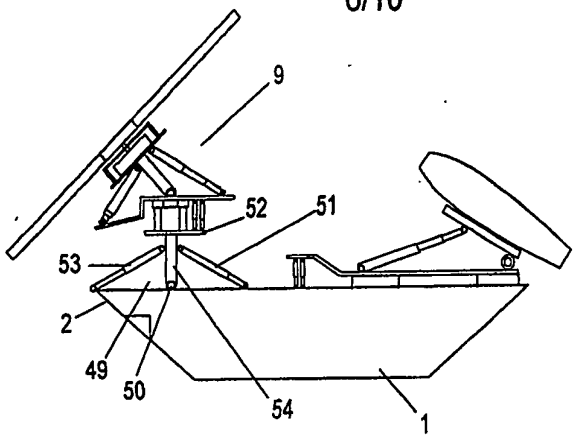

FIG. 6

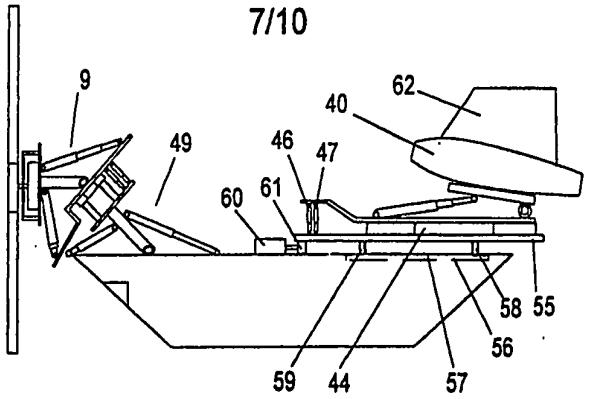

FIG. 7

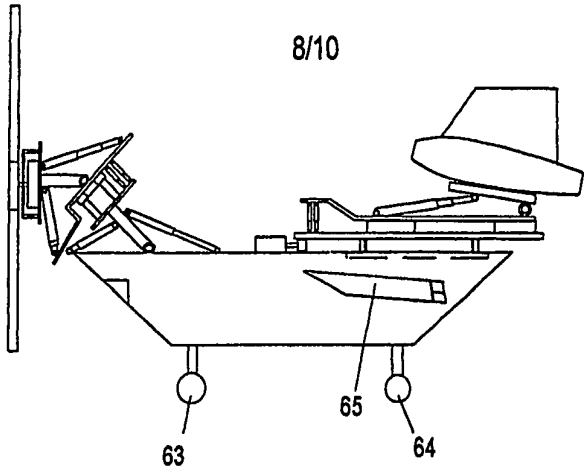

FIG. 8

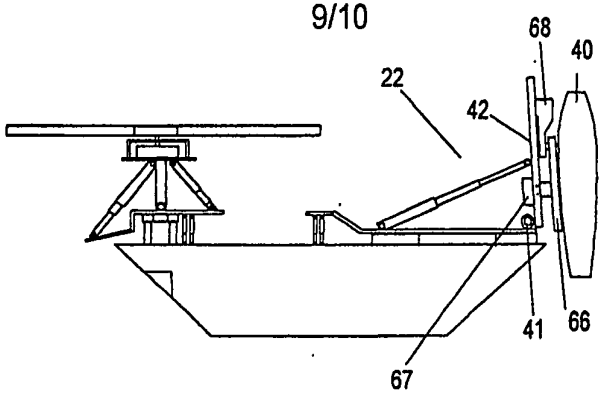

FIG. 9

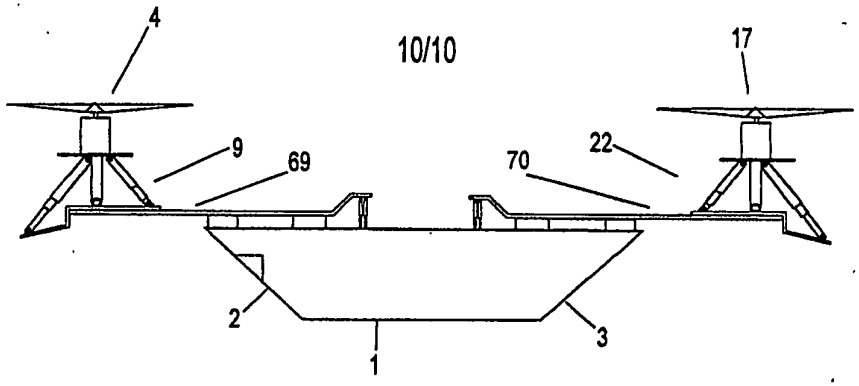

FIG. 10